IN THE SPECIFICATION:

Please replace the paragraph beginning at page 3, line 4 with the following amended paragraph:

The object of the invention is therefore to propose a protection device against voltage surges that does not have the drawbacks set out above. More precisely, its object is to propose a protection device against voltage surges that comprises a non-linear electric dipole, or electrical ignition means, in particular with a variable resistor, designed to respond quickly to the voltage surges occurring at the terminals of the device, and means to divert very high currents directly to earth without flowing via the dipole.

Please replace the paragraph beginning at page 3, line 25 with the following amended paragraph:

An electric dipole, or electrical ignition means, connected in such a way that when the mobile electrode is in the operating position, the electric dipole is connected to the arc switching electrode on the one hand and to the first or second connecting pads on the other hand, and that when the mobile electrode is in the switching position and an electric arc is drawn between the first connecting electrode and the second connecting electrode, the electric dipole is disconnected from the circuit, the electric dipole having an ohmic resistance varying non linearly with the voltage applied to the dipole, the ohmic resistance being high when the voltage is lower than an ignition voltage and decreasing when the voltage increases above the ignition voltage.

Please replace the paragraph beginning at page 4, line 14 with the following amended paragraph:

According to an alternative embodiment, the electric dipole, or electrical ignition means, is connected in series between the first connecting electrode and a fixed fourth electrode situated at a distance from the first connecting electrode and in such a way that the mobile electrode in the operating position is electrically connected to the fixed fourth electrode.

Please replace the paragraph beginning at page 5, line 26 with the following amended paragraph:

Advantageously, the electric dipole, or electrical ignition means, comprises a variable resistor.

Please replace the paragraph beginning at page 5, line 28 with the following amended paragraph:

Alternatively, it can be provided for the electric dipole, or electrical ignition means, to comprise a spark arrester. It can also be provided for the electric dipole to comprise a spark arrester and/or an impedance connected in series between a variable resistor on the one hand and the second connecting pad or the mobile electrode on the other hand.

Please replace the paragraph beginning at page 6, line 28 with the following amended paragraph:

The second connecting pad 20 is also connected to the mobile electrode 22 by means of a circuit branch 34 containing an electric ignition dipole, or electrical ignition means, 36 formed by a variable resistor 40 and a spark arrester 38 connected in series. This dipole 36 is characterized by an ignition voltage below which the current flowing in the dipole is zero (infinite ohmic resistance) and above which the dipole is turned on, with a low ohmic resistance. The presence of the spark arrester 38 prevents leakage current if the variable resistor 36 is damaged. The variable resistor 36, gives the dipole a suitable voltage-current curve, with the ohmic resistance decreasing progressively as the voltage increases.

Please replace the paragraph beginning at page 7, line 17 with the following amended paragraph:

In the absence of a voltage surge on the line, the potential difference between the two connecting pads 16, 20 is lower than the ignition voltage defined by the ignition dipole, or electrical ignition means 36. The device is not turned on.

Please replace the paragraph beginning at page 7, line 25 with the following amended paragraph:

If the current intensity is not very high, the induced electromagnetic field is insufficient to compensate the contact pressure defined by the return spring 48 and causes the mobile contact 24 to be raised. As soon as the current wave has passed, the potential difference at the terminals of the ignition dipole, or electrical ignition means, 36 drops back below the ignition voltage and the ignition dipole is turned off again. The follow current is therefore interrupted by the ignition dipole 36.

Please replace the paragraph beginning at page 8, line 3 with the following amended paragraph:

If the current intensity is higher, the electromagnetic field induced by the current flowing through the inductance coil 42 is sufficient to compensate the contact pressure defined by the return spring 48 and to project the mobile electrode 22 to the switching position represented in figure 2. An electric arc (in fine mixed lines in figure 2) is formed between the contacts 14, 24 as soon as separation of the latter takes place, and the switched arc foot moves at high speed onto the first electrode 12. The current intensity may not be sufficiently great to project the arc into the chute, but in this case electro-magnetic repulsion at least prevents the mobile electrode from dropping back down. The current is then interrupted by the ignition dipole, in series with the arc drawn between the contacts. If the current is very high, the magnetic field induced by the loop effect due to the shape of the first electrode, and by the magnetic circuit concentrating the field induced by the inductance coil 42 close to the mobile electrode 22, quickly becomes very high, and the arc is propelled towards the arc chute 30. The mobile electrode 22, when moving from its

separated position, moves towards the second electrode 18 and thus enables the arc to switch onto the second electrode 18. At this moment, the current which was up to then flowing via the branch 34 of electric circuit containing the ignition dipole, or electrical ignition means 36, also switches onto the branch formed by the first electrode 12, the electric arc, the second electrode 18 and the second connecting pad 20. This switching disconnects the ignition dipole 36 from the circuit and enables it to be preserved.

Please replace the paragraph beginning at page 8, line 29 with the following amended paragraph:

In all the cases where the current is sufficiently high to lift the mobile electrode 22, electromagnetic repulsion prevents the mobile electrode 22 from falling back down until the current is cancelled in the mobile electrode. The weight of the mobile electrode 22 and the stiffness of the return spring 48 are chosen according to the threshold above which it is desired to limit the current in the electric dipole, or electrical ignition means 36, but also to ensure that the mobile electrode does not fall onto the first connecting electrode before the arc between the connecting electrodes has been extinguished. In practice, an electrode 22 of very low inertia and a spring of weak stiffness are therefore chosen.

Please replace the paragraph beginning at page 9, line 25 with the following amended paragraph:

The mobile electrode 22 is electrically connected to the second connecting pad 20 and to the second connecting electrode 18 by means of an electric circuit branch 34 comprising an electric dipole, or electrical ignition means, 36 formed by a variable resistor 40.

Please replace the paragraph beginning at page 9, line 29 with the following amended paragraph:

In operation, one of the connecting pads is connected to an electric line 50 and the to earth 52. In operation, the device is not on, as the first connecting electrode 12 is located at a distance from the electrode 62 of the stud 60. If the potential difference between the fixed electrode and the pad exceeds a threshold set by the ignition circuit 68 and higher than the ignition voltage of the variable resistor 40, the voltage of the ignition electrode 66 is increased by the ignition circuit 68 to a level such that an arc is triggered between the ignition electrode 66 and one of the electrodes 12, 62. This arc is immediately established between the connecting electrode 12 and stud 60, and the electric current finds a path between the connecting pads 16, 20, flowing via the connecting electrode 12, the arc, the stud 60, the mobile electrode 22 in the rest position and the variable resistor ~~36~~ 40 that has been turned on. The loop shape of the electrode 12 induces electromagnetic forces on the arc propelling the latter towards the arc chute 30. The arc thereby switches directly on the second connecting electrode and penetrates into the arc chute where it is extinguished at the end of the current wave. Extinction of the arc opens the circuit and the line is isolated from the earth. The total lifetime of the arc, a few tens of microseconds, is sufficiently small for the relay not to operate, due to its inertia.

Please replace the paragraph beginning at page 10, line 15 with the following amended paragraph:

Under certain circumstances however, an electric arc may persist between the first connecting electrode 12 and the stud 60, either due to a follow current or due to degrading of the electrodes over time. In such a case, the electromechanical relay 70 is supplied for a sufficiently long time to move the mobile assembly 76 the end 78 whereof strikes the mobile electrode 22 and projects it to the switching position, as represented in figure 4. The arc then switches between the connecting electrode 12 and the mobile electrode 22 then between the two connecting electrodes 12, 18, and is elongated until it enters the arc chute. From the time the arc has switched between the two connecting electrodes 12, 18, the circuit branch comprising the variable resistor ~~36~~ 40 is switched out of the circuit, ensuring protection of the variable resistor 40. The arc is then free to penetrate completely into the arc chute 30 where it encounters the deionizing fins 32 which cool the arc and cause extinction thereof. A latch can be provided to prevent the mobile electrode 22 from falling back. A resetting mechanism can be provided to enable the mobile electrode 22 and/or relay 70 to be returned to the operating position.

Please replace the paragraph beginning at page 10, line 29 with the following amended paragraph:

In figure 5 a device according to a third embodiment of the invention has been represented, which only differs from the device according to the second embodiment by the specific

connection of the dipole, or electrical ignition means 36, between the first connecting electrode 12 and the stud 60. In this case, the variable resistor 40 of the dipole 36 is connected in parallel with the spark arrester formed by the first connecting electrode 12, the fixed stud 60 and the ignition electrode 66, so that the ignition voltage is controlled by the dipole 36 only, whereas in the second embodiment the voltage was defined by the dipole in series with the spark arrester. In this embodiment as well, the dipole 36 is switched out of the circuit when the electric arc has switched between the connecting electrodes 12, 18.

Please replace the paragraph beginning at page 11, line 8 with the following amended paragraph:

A protection device according to a fourth embodiment of the invention has been represented in figures 6 to 9. This device is of similar constitution to that of the first embodiment, so that the same reference signs have been taken to designate identical or similar elements. Like the device according to the first embodiment, it comprises a first connecting electrode 12 provided with a fixed contact 14 and connected to a first connecting pad 16, a second connecting electrode 18 connected to a second connecting pad 20, and a mobile electrode 22. The first connecting electrode 12 is U-shaped to foster an electromagnetic repulsion effect on the mobile electrode 22. To set the idea out clearly, the first connecting pad 16 has been connected to a line 50 and the second connecting pad has been connected to the earth 52. The mobile electrode 22 is provided with a contact 24 operating, in the operating position represented in figure 6, in conjunction with the fixed contact 14. The two connecting electrodes 12, 18 are

situated at a distance from one another, and bound the inlet of an arc chute 30 equipped with deionizing fins 32. The second connecting pad 20 is also connected to the mobile electrode 22 by means of a circuit branch 34 whereon there is connected in series an electric ignition dipole, or electrical ignition means, 36 comprising a variable resistor 40 and a spark arrester 38 connected in series.

Please replace the paragraph beginning at page 12, line 18 with the following amended paragraph:

Operation of the device according to the fourth embodiment is similar to that of the first embodiment. In case of a large difference of potential between the two connecting electrodes 12, 18, exceeding the ignition voltage of the dipole, or electrical ignition means 36, the dipole 36 turns on enabling the current to flow to earth. If the current intensity is high, the electromagnetic repulsion forces induced on the mobile electrode 22 are sufficient to lift the electrode 22 by compressing the contact pressure spring 102, the electrode support 100 remaining immobile, as represented in figure 8. As soon as separation of the contacts takes place, an electric arc arises, which arc tends to limit the current flowing in the dipole 36. The U shape of the connecting electrode 12 also tends to foster elongation of the arc in the direction of the arc chute 30. Although the mechanism remains immobile, the slight movement of the mobile electrode 22 and the second connecting electrode 18 towards one another, combined with the intense electromagnetic field at the inlet of the arc chute 30, is sufficient for the arc to elongate curving

in the arc chute, and then to switch on the second connecting electrode 18. It can therefore be considered that the repulsion position of the mobile electrode 22 is a switching position.